

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-39. (Canceled)

40. (Currently Amended) An arrangement for serving information requests, comprising:

a plurality of information servers connected to a communications network, all of the information servers having a common address on the communications network and serving a set of information to clients, each of the information servers being configured to receive a transaction request associated with an individual transaction and to provide a response to each transaction request; and

a content director connecting the information servers to the communications network and distributing transaction requests among the information servers comprising:

a flow switch that selects an appropriate information server to service each transaction request and thereafter forwards at least portions of the transaction request to a selected one of the information servers;

a cache processor that accesses a ~~plurality of objects in response to communications received from the flow switch~~cache;

~~[[a]]the cache that stores, in a hot invariant locator table, the plurality of objects corresponding to at least some of the transaction requests forwarded to one or more of the information servers, the hot invariant table identifying information frequently requested from the information servers and including, for each invariant locator identifying corresponding information, a hit counter indicating a number of direct transaction requests, received by the plurality of servers over a determined time interval, requesting the corresponding information;~~

a digest generator that generates, when the hit counter for a[[n]] invariant locator indicates at least a threshold transaction request receipt frequency but not when the hit counter fails to indicate at least a threshold transaction receipt frequency, a digest value pointing to the location in the hot invariant locator table where the corresponding entry is stored; and

a digest store that stores the digests corresponding to frequently requested content.

41. (Previously Presented) The arrangement of claim 40, wherein the flow switch parses plain text transaction requests to locate selected fields and wherein the content director further comprises:

a cryptographic module that decrypts, prior to parsing and information server selection by the flow switch, cipher text transaction requests and provides plain text transaction requests to the flow switch, wherein, prior to decryption, the cipher text transaction requests have not been routed by another flow switch.

42. (Currently Amended) The arrangement of claim 41, wherein, first and second encrypted transaction requests are received from different clients having a common electronic address and served substantially simultaneously by different information servers, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the flow switch to service transaction requests from the client, and wherein the flow switch uses at least one of an invariant locator, a cookie, and a tag in the parsed plain text equivalent of each transaction request to select an appropriate information server to service each of the first and second transaction requests.

43. (Previously Presented) The arrangement of claim 40, wherein each in the hot table further has a corresponding timestamp indicating when the respective entry was last updated, and a tag identifying a corresponding information server providing the corresponding information.

44. (Previously Presented) The arrangement of claim 40, wherein the digest store includes a digest value for each frequently requested .

45. (Currently Amended) The arrangement of claim ~~[[40]]~~44, wherein, when the hit counter for an ~~indicates~~ at least a threshold transaction request receipt frequency, the information corresponding to the ~~invariant locator~~ is served by a cache information server and not an origin information server.

46. (Currently Amended) The arrangement of claim 45, wherein, when the hit counter for a~~[[n]]~~ ~~invariant locator~~ falls below a threshold transaction request receipt frequency, the information corresponding to the ~~invariant locator~~ is served by an origin information server and not a cache information server.

47. (Currently Amended) The arrangement of claim 40, wherein the digest value is determined according to the following equation:

$L = h(K)$, where $0 \leq L \leq M$, for all keys K , where K is at least a portion of the ~~invariant locator~~, h is the hash function, L is the location of K in the hot ~~invariant locator~~ table, and M is the size of the hot ~~invariant locator~~ table.

48. (Previously Presented) The arrangement of claim 40, further comprising:
at least one traffic manager located between the content director and one or more clients to effect load balancing across a plurality of content directors.

49. (Currently Amended) The arrangement of claim 40, wherein the content director includes a current connection table listing active connections between servers and clients, the current connection table comprising, for a selected ~~invariant locator~~, a session identifier identifying a session with a client, a persistency timestamp indicating when a last transaction

request was received from the respective client for the selected ~~invariant~~locator, and cookie name and value.

50. (Previously Presented) The arrangement of claim 40, wherein the flow switch is operable to tag a transaction response, the tag identifying an information server generating the transaction response.

51. (Currently Amended) The arrangement of claim 50, wherein at least some of the responses include a cookie, wherein the cookie ~~[[is]]~~was previously generated by the information server previously assigned by the flow switch to service transaction requests from the client, and wherein the cookie is different from the tag.

52. (Previously Presented) The arrangement of claim 51, wherein the tag is concatenated to the cookie.

53. (Currently Amended) The arrangement of claim 52, wherein, during a first time interval, the flow switch is in a tagging mode in which the switch generates and appends tags to transaction responses and, during a second different time interval, the switch operates in a digesting mode in which digests are generated, ~~invariant~~locator hotness is monitored, and transaction requests are routed to information servers based on requested ~~invariant~~locator hotness and/or cookie, wherein, in the tagging mode, ~~invariant~~locator hotness is not monitored, and wherein, in the digesting mode, tags are not generated and appended to transaction responses.

54. (Currently Amended) In an arrangement comprising a plurality of information servers connected to a communications network, each of the information servers being configured to receive a transaction request associated with an individual transaction and to

provide a response to each transaction request, a method for serving transaction requests from clients comprising:

maintaining a hot invariant locator table identifying information frequently requested from the information servers, the hot invariant locator table including, for each invariant locator identifying corresponding information, a hit counter indicating a number of direct transaction requests, received by the plurality of information servers over a determined time interval, requesting the corresponding information;

generating, when the hit counter for a selected invariant locator indicates at least a threshold transaction request receipt frequency, a digest value pointing to the location in the hot table where the entry corresponding to the selected invariant locator is stored; and

accessing a digest store comprising the digest values to select an information server to service a transaction request for frequently requested information.

55. (Previously Presented) The method of claim 54, wherein all of the information servers have a common address on the communications network and serve a set of information to clients and further comprising:

a cryptographic module decrypting a cipher text transaction request to provide a plain text transaction request to a first flow switch;

the first flow switch parsing the plain text transaction request to locate one or more selected fields;

the first flow switch, based on the one or more selected fields, selecting an appropriate information server to service the transaction request; and

the first flow switch thereafter forwarding at least portions of the plain text transaction request to a selected one of the information servers, wherein the cipher text transaction request is decrypted prior to the parsing and selecting steps and wherein, prior to the decrypting step, the cipher text transaction request has not been directed to a flow switch other than the first flow switch.

56. (Currently Amended) The method of claim 55, further comprising:
receiving first and second encrypted transaction requests from different clients having a common electronic address, the requests being served substantially simultaneously by different information servers, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the first flow switch to service transaction requests from the client, and wherein the first flow switch uses at least one of an invariant locator, a cookie, and a tag in the parsed plain text equivalent of each transaction request to select an appropriate information server to service each of the first and second transaction requests.

57. (Currently Amended) The method of claim 54, wherein each invariant locator in the hot table further has a corresponding timestamp indicating when the respective entry was last updated, and a tag identifying a corresponding information server providing the corresponding information.

58. (Previously Presented) The method of claim 54, wherein a digest value is generated for each frequently requested .

59. (Currently Amended) The method of claim 58, further comprising:
when the hit counter for an indicates at least a threshold transaction request receipt frequency, directing a transaction request for information associated with the invariant locator to a cache information server.

60. (Currently Amended) The method of claim 59, further comprising:
when the hit counter for an invariant locator falls below a threshold transaction request receipt frequency, directing a transaction request for information associated with the invariant locator to an origin information server.

61. (Currently Amended) The method of claim 54, wherein the digest value is determined according to the following equation:

$L = h(K)$, where $0 \leq L \leq M$, for all keys K , where K is at least a portion of the ~~invariant~~ locator, h is the hash function, L is the location of K in the hot ~~invariant~~ locator table, and M is the size of the hot ~~invariant~~ locator table.

62. (Previously Presented) The method of claim 54, wherein at least one traffic manager is located between the content director and one or more clients to effect load balancing across a plurality of content directors.

63. (Currently Amended) The method of claim 54, further comprising:
maintaining a current connection table listing active connections between servers and clients, the current connection table comprising, for a selected ~~invariant~~ locator, a session identifier identifying a session with a client, a persistency timestamp indicating when a last transaction request was received from the respective client for the selected ~~invariant~~ locator, and cookie name and value.

64. (Previously Presented) The method of claim 54, further comprising:
during a first time interval, the first flow switch tagging a transaction response, the tag identifying an information server generating the transaction response.

65. (Currently Amended) The method of claim 64, wherein at least some of the responses include a cookie, wherein the cookie ~~[[is]]~~ was previously generated by the information server previously assigned by the first flow switch to service transaction requests from the client, wherein the tag is appended to the cookie, and wherein the cookie is different from the tag.

66. (Previously Presented) The method of claim 65, wherein the tag is concatenated to the cookie.

67. (Currently Amended) The method of claim 64, further comprising:
during a second different time interval, generating a digest value for frequently requested information, the digest value indicating a location where an object associated with the frequently requested information is stored;
monitoring the frequency of transaction requests for information; and
directing transaction requests to information servers based on the frequency of request of information and/or a cookie included in at least some of the transaction requests, wherein, in the first time interval, ~~invariant~~ locator hotness is not monitored, and wherein, in the second time interval, tags are not generated and appended to transaction responses.

68. (Previously Presented) A computer readable medium comprising processor executable instructions to perform the steps of claim 54.

69. (Currently Amended) An arrangement for serving information requests, comprising:
a plurality of information servers connected to a communications network, all of the information servers having a common address on the communications network and serving a set of information to clients, each of the information servers being configured to receive a transaction request associated with an individual transaction and to provide a response to each transaction request; and
content director means for connecting the information servers to the communications network and distributing transaction requests among the information servers comprising:
first flow switching means for parsing plain text transaction requests to locate selected fields, selecting an appropriate information server to service each transaction request,

and thereafter forwarding at least portions of the parsed transaction requests to a selected one of the information servers;

cache processing means for accessing a plurality of objects in response to communications received from the first flow switching means;

cache means for storing, in a hot ~~invariant~~ locator table, the plurality of objects ~~corresponding to transaction requests forwarded to one or more of the information servers, the hot invariant table including locators~~ identifying information frequently requested from the information servers and including, for each ~~invariant~~ locator identifying corresponding information, a hit counter indicating a number of direct transaction requests, received by the plurality of information servers over a determined time interval, requesting the corresponding information;

digest generator means for generating, when the hit counter for a ~~[[n]] invariant~~ locator indicates at least a threshold transaction request receipt frequency but not when the hit counter fails to indicate at least a threshold transaction receipt frequency, a digest value pointing to the location in the hot ~~invariant~~ locator table where the corresponding entry is stored; and

digest store means for storing the digests corresponding to frequently requested content.

70. (Previously Presented) The arrangement of claim 69, wherein the content director means further comprises:

decrypting means for decrypting, prior to parsing and information server selection by the first flow switching means, cipher text transaction requests and providing plain text transaction requests to the first flow switching means, wherein, prior to the decrypting function, the cipher text transaction request has not been directed to a flow switching means other than the first flow switching means.

71. (Currently Amended) The arrangement of claim 70, wherein, first and second encrypted transaction requests are received from different clients having a common electronic address and served substantially simultaneously by different information servers, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the first flow switching means to service transaction requests from the client, and wherein the first flow switching means uses at least one of an invariant locator, a cookie, and a tag in the parsed plain text equivalent of each transaction request to select an appropriate information server to service each of the first and second transaction requests.

72. (Currently Amended) The arrangement of claim 69, wherein, when the hit counter for a[[n]] invariant locator indicates at least a threshold transaction request receipt frequency, the information corresponding to the invariant locator is served by a cache information server and not an origin information server and wherein, when the hit counter for an invariant locator falls below a threshold transaction request receipt frequency, the information corresponding to the invariant locator is served by an origin information server and not a cache information server.

73. (Currently Amended) The arrangement of claim 69, wherein the digest value is determined according to the following equation:

$$L = h(K), \text{ where } 0 \leq L \leq M, \text{ for all keys } K, \text{ where } K \text{ is at least a portion of the } \underline{\text{invariant locator}},$$

h is the hash function, L is the location of K in the hot table, and M is the size of the hot table.

74. (Previously Presented) The arrangement of claim 69, wherein the first flow switching means tags a transaction response, the tag identifying an information server generating the transaction response, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the first flow switching

means to service transaction requests from the client, wherein the cookie is different from the tag, and wherein the tag is concatenated to the cookie.

75. (Currently Amended) In an arrangement comprising a plurality of information servers connected to a communications network, each of the information servers being configured to receive a transaction request associated with an individual transaction and to provide a response to each transaction request, a method for serving transaction requests from clients comprising:

maintaining a hot ~~invariant~~ locator table identifying information frequently requested from the information servers, the hot ~~invariant~~ locator table including, for each ~~invariant~~ locator identifying corresponding information, a hit counter indicating a number of direct transaction requests, received by the plurality of servers over a determined time interval, requesting the corresponding information;

when the hit counter for an ~~invariant~~ locator indicates at least a threshold transaction request receipt frequency, locating the information associated with the ~~invariant~~ locator at a cache information server and thereafter directing a transaction request for information associated with the ~~invariant~~ locator to a cache information server; and

when the hit counter for a[[n]] ~~invariant~~ locator falls below a threshold transaction request receipt frequency, directing a transaction request for information associated with the ~~invariant~~ locator to an origin information server.

76. (Previously Presented) The method of claim 75, wherein all of the information servers have a common address on the communications network and serve a set of information to clients and further comprising:

a cryptographic module decrypting a cipher text transaction request to provide a plain text transaction request to a first flow switch;

the first flow switch parsing the plain text transaction request to locate one or more selected fields;

the first flow switch, based on the one or more selected fields, selecting an appropriate information server to service the transaction request; and

the first flow switch thereafter forwarding at least portions of the plain text transaction request to a selected one of the information servers, wherein the cipher text transaction request is decrypted prior to the parsing and selecting steps and wherein, prior to the decrypting step, the cipher text transaction request has not been directed to a flow switch other than the first flow switch.

77. (Currently Amended) The method of claim 76, further comprising:

receiving first and second encrypted transaction requests from different clients having a common electronic address, the requests being served substantially simultaneously by different information servers, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the first flow switch to service transaction requests from the client, and wherein the first flow switch uses at least one of an invariant locator, a cookie, and a tag in the parsed plain text equivalent of each transaction request to select an appropriate information server to service each of the first and second transaction requests.

78. (Currently Amended) The method of claim 76, further comprising:

generating, when the hit counter for a[[n]] invariant locator indicates at least a threshold transaction request receipt frequency, a digest value pointing to the location in the hot invariant locator table where the corresponding entry is stored; and

accessing the hot invariant locator table to select an information server to service a transaction request for frequently requested information.

79. (Currently Amended) The method of claim 78, wherein a digest value is generated for each frequently requested invariant locator.

80. (Currently Amended) The method of claim 75, wherein each invariant locator in the hot invariant locator table further has a corresponding timestamp indicating when the respective entry was last updated, and a tag identifying a corresponding information server providing the corresponding information.

81. (Currently Amended) The method of claim 78, wherein the digest value is determined according to the following equation:

$L = h(K)$, where $0 \leq L \leq M$, for all keys K , where K is at least a portion of the invariant locator, h is the hash function, L is the location of K in the hot invariant locator table, and M is the size of the hot invariant locator table.

82. (Previously Presented) The method of claim 75, wherein at least one traffic manager is located between the content director and one or more clients to effect load balancing across a plurality of content directors.

83. (Currently Amended) The method of claim 75, further comprising:
maintaining a current connection table listing active connections between servers and clients, the current connection table comprising, for a selected invariant locator, a session identifier identifying a session with the respective client, a persistency timestamp indicating when a last transaction request was received from a client for the selected invariant locator, and cookie name and value.

84. (Previously Presented) The method of claim 75, further comprising:
during a first time interval, the first flow switch tagging a transaction response, the tag identifying an information server generating the transaction response.

85. (Previously Presented) The method of claim 84, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the first flow switch to service transaction requests from the client, and wherein the cookie is different from the tag.

86. (Previously Presented) The method of claim 85, wherein the tag is concatenated to the cookie.

87. (Currently Amended) The method of claim 84, further comprising:
during a second different time interval, generating a digest value for frequently requested information, the digest value indicating a location where an object associated with the frequently requested information is stored;
monitoring the frequency of transaction requests for information; and
directing transaction requests to information servers based on the frequency of request of information and/or a cookie included in at least some of the transaction requests, wherein, in the first time interval, ~~invariant~~ locator hotness is not monitored, and wherein, in the second time interval, tags are not generated and appended to transaction responses.

88. (Previously Presented) A computer readable medium comprising processor executable instructions to perform the steps of claim 75.